

I CLAIM:

1. A method of packaging a high density integrated circuit with at least one microchip disposed on a substrate comprising, forming an array of a plurality of bonding pads on the entire surface of said microchip, attaching insulated bond wires directly onto said bonding pads and onto terminal pads disposed on said substrate.
2. A method of packaging a high density integrated circuit according to Claim 1, wherein said bonding pads and said bond wires are made of the same metal, and said bonding pads are located at selected locations over the entire surface of said microchip.
3. A method of packaging a high density integrated circuit according to Claim 2, wherein said insulated bond wires are insulated aluminum wires and said bonding pads are made of metallized aluminum, and said insulated aluminum wires are attached to said bonding pads on said microchip by a ball bonding process.

4. A method of packaging a high density integrated circuit according to Claim 3 wherein said insulated aluminum wires are finer than 15 microns and having an oxidized outer insulation.

5. A method of packaging a high density integrated circuit having at least one semiconductor microchip disposed on a substrate having a plurality of terminal pads provided thereon, comprising

forming an array of a plurality of bonding pads in a plurality of rows and columns over the entire surface of said microchip,

connecting selected bonding pads on said microchip with selected terminal pads on said substrate with insulated bond wires wherein said bond wires are attached to said bonding pads with a ball bonding process.

6. A method of packaging a high density integrated circuit according to Claim 5 including coating and integrated circuit with a protective encapsulating material.

7. A method of packaging a high density integrated circuit according to Claim 6 wherein said bonding pads are located at selected locations over the entire surface of said microchip.

8. A method of packaging a high density integrated circuit according to Claim 7 wherein a plurality of semiconductor microchips are disposed on said substrate, and interconnections among selected bonding pads on said microchips are provided by insulated aluminum alloy wires bonded to said selected bonding pads.

9. A high density integrated circuit package comprising
at least one semiconductor microchip element disposed on a substrate having a plurality of terminal pads provided thereon,
a plurality of connection bonding pads formed at selected locations over an active surface of said microchip,
insulated bond wires connected by ball bonding directly to said bonding pads on said microchip and said terminal pads on said substrate.

10. A high density integrated circuit according to Claim 9 wherein said bonding pads are made of metallized aluminum, and are located in a plurality of rows and columns dispersed over the entire active surface of said microchip.

11. A high density integrated circuit according to Claim 10 wherein said insulated bond wires are insulated aluminum alloy wires having an oxidized outer insulation.

12. A high density integrated circuit according to Claim 11 including a protective encapsulating material applied over said microchip.

13. A high density integrated circuit according to Claim 12 wherein said bonding pads are formed in selected random locations over the surface of said microchip.

14. A high density integrated circuit according to Claim 13 including a plurality of microchips disposed on said substrate, said plurality of microchips having said bonding pads formed at a plurality of selected random locations dispersed over the entire surface thereon, and a plurality of said bond wires interconnecting directly between selected bonding pads among said microchips.